

REMARKS

Claims 1 – 20 are in the application.

No claims have been allowed.

I. The Objections and Rejections

(a) Claims 3 and 4 have been objected to as not being dependent on previous claims.

(b) Claims 1, 2, 5 – 9 and 12 - 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Hu et al (US 5841478).

(c) Claims 3, 4 and 10 – 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hu et al. (US 5841478) in view of Alberty (US 6304616).

2. The Response

(a) The Objection to Claims 3 and 4 as to Improper Dependency

Claims 3 and 4 each have been amended to be dependent on claim 2, thereby overcoming this objection.

(b) The Stated Basis for Rejection of claims 1,2, 5 - 7 and 14 – 19

Based on Hu et al. Under § 102(b)

In the rejection of claim 1, the Examiner states:

"Hu discloses ----- means for generating decision data associated with trellis state transitions in response to said video data (col. 16, lines 61 – 62) comprising means for estimating a value for a second data bit from a pair of first and second data bits (col. 13, line 66 – col. 14, line 9, Z1 and Z0 comprise the pair of data bits, the Z2 value is the closest to the received delayed symbol point and interpreted to be estimated)". (Rejection, page 3).

In the related rejection of claim 2, the Examiner states:

"Re claim 2, Hu discloses a system further including means for calculating for a current trellis branch a value for the first data bit

and an estimated value for the second data bit (col. 4, lines 46 – 53, col. 7, lines 10 – 13). (Rejection, bottom of page 3).

(b)(i) What Hu et al. Discloses at Column 13

Beginning at col. 13, line 66, Hu et al states

"Input re-encoded data Z1 and Z0 from units 50 and 70 for the first interleaved symbol uniquely define one of the four cosets previously described, as indicated in symbol mapper table 125 of FIG. 2. For example, Z1 = 1, Z0 = 0, defines coset point C (-3, +5). Look-up table function 960 of FIG. 11 compares the input symbol output from adder 950 with each of the two constellation points in the coset defined by inputs Z1 and Z0. The constellation point closest to the received delayed symbol point is determined and the Z2 value of this constellation point is provided to post-coder 977 as the decoded Z2 value for the first interleaved symbol. Demapper 60 repeats this process for each interleaved symbol packet received from unit 70 using synchronized associated symbol data from units 47 and 50.".

It can readily be seen that Hu et al is describing operations that take place in their re-encoder 50 and trellis demapper 60 (see FIG. 1 and FIG. 11 of Hu et al.). Hu et al. is operating on "re-encoded data Z1 and Z0" (and Z2) – see quote above. The relevant description of how Hu et al operates is contained at Page 7 of the specification of applicant's present application as follows:

"These re-encoded bits" (Z0 and Z1 bits) "are forwarded to the trellis demapper. Simultaneously, a delayed version of the received sequence of coded symbols is generated by the delay unit and sent to the trellis demapper. The trellis demapper uses the delayed received coded sequence, together with the re-encoded bits Z0 and Z1 to identify the encoded bit Z2 and the corresponding information bit X2".

These portions of the process and apparatus of Hu et al. (re-encoder and demapper) as described above are eliminated in accordance with the present invention. That is, the demapper and re-encoder (and an associated delay) of Hu et al do not exist in the presently claimed system and method. Thus, in order to identify the information bit X2, Hu must go through additional processing in additional apparatus which is not required in accordance with the present invention.

Independent claim 1 has been amended accordingly to emphasize the associated differences between Hu et al. and the present invention.

Specifically, in claim 1, it should be noted that the first element of that claim is “means for generating decision data ----- , including a branch metric computer, comprising means for selecting an estimated value for a second information data bit, etc.”. As is explained in the present application, Hu et al. does not provide such information about the X2 bit from the branch metric computer (see present application at lines 17 – 20) and, as a result, Hu requires substantial additional equipment to accomplish the necessary processing.

It should be noted that claim 14 has been amended to be dependent on amended claim 1. It is respectfully submitted that all of the claims now dependent on claim 1 (i. e. claims 2 – 7 and 14 – 19), as well as claim 1, are patentably distinct from Hu et al by virtue of this substantial difference. Reconsideration and withdrawal of the rejection of claims 1 – 7 and 14 – 19 based on Hu et al. are therefore requested.

(b)(ii) The Stated Basis for Rejection of claims 8, 9, 12, and 13

Based on Hu et al. Under § 102(b)

Independent method claim 8, as well as claims 9 – 13 dependent on claim 8, have been rejected as follows.

The rejection of Applicant’s claim 8 is based principally on language recited in claim 11 of Hu et al. Claim 8 has been amended principally by rearranging the order in which elements are recited in order to emphasize the distinctions of claim 8 over the cited art. To illustrate the similarities and differences between Applicant’s claim 8 and claim 11 of Hu et al., Applicant’s

amended claim 8 is reproduced below with all language which is also found in Hu et al.'s claim 11 NOT being underlined and all language which is found ONLY in Applicant's claim 8 being underlined.

Applicant's Claim 8 (annotated for differences) reads as follows:

8. (Currently amended) In a system for processing video data comprising groups of interleaved trellis encoded data packets formed from information data pairs containing a first data bit and a second data bit, a method of providing trellis decoded data comprising the steps of:

generating decision data associated with trellis state transitions in response to said video data including calculating a value for a first data bit and estimating a value for a second data bit;

identifying a sequence of antecedent trellis states in accordance with a state transition trellis, wherein said antecedent states are identified for a sequence of collocated interleaved packets in response to said decision data; and

providing said trellis decoded data in response to said identified sequence of antecedent trellis states.

For the claim element "calculating a value for the first data bit", the Examiner relies upon Hu et al., col. 4, lines 51 – 53 (referring to the PRIOR ART FIG. 2 of Hu et al.) which reads:

"---- Z2, as known. X1 is encoded as two bits Z1 and Z0, as known, by trellis encoder 103 comprising adder 115 and registers 110 and 120. The output data words from the FIG. ---".

For the claim element "estimating a value for the second data bit", the Examiner relies upon Hu et al., col. 14, lines 6 – 9 (referring to FIG. 11 of Hu et al. which reads:

"---- Z1 and Z0. The constellation point closest to the received delayed symbol point is determined and the Z2 value of this constellation point is provided to post coder 977 as the decoded Z2 value for the first interleaved symbol. Post-".

With respect to the latter, the Examiner stated “the Z2 value is the closest to the received delayed symbol point and interpreted to be estimated”.

At the outset, it should be noted that claim 8 relates to processing video data “formed from information data pairs containing a first data bit and a second data bit”. The present invention relates to systems and methods for decoding information data pairs using a trellis decoder at a receiving end of a communication system

The PRIOR ART shown in Hu et al.’s FIG. 2 depicts very different apparatus, that is, a trellis encoder for use at the transmission end of a communication system. The Examiner has not made any showing of how or why knowledge that a parameter X1 may be encoded as two bits Z0 and Z1 is related, in a system for processing video data, to a method for providing trellis decoded data including a step of “generating decision data -----including calculating a value for a first data bit” (claim 8) of an information data pair.

Similarly, the Examiner has not made any showing of how or why operation of the apparatus of Hu et al.’s FIG. 11 such that “The constellation point closest to the received delayed symbol point is determined and the Z2 value of this constellation point is provided to post coder 977 “ corresponds to “estimating a value for the second data bit”, as set forth in claim 8.

The Examiner’s approach amounts to a piece by piece attempt at partial reconstruction, from unrelated pieces, of Applicant’s claimed combination(s), making use of Applicant’s disclosure rather than what the prior art (Hu et al.) teaches.

Although there are portions of Applicant’s claim 8 which are the same as Hu et al.’s claim 11, no showing has been made in the rejection of how or why one would modify anything Hu et al. has in his system in order to add the elements underlined above in Applicant’s claim 8.

It is respectfully submitted that these underlined differences amount to patentable distinctions between claim 8 and what Hu et al. discloses. Reconsideration and allowance of claim 8 are therefore requested. In addition, reconsideration and allowance of Applicant’s claims 9 – 13 which are dependent

on claim 8 are also requested in view of the distinguishing features of claim 8 over Hu et al. as pointed out above.

(b)(iii) The Stated Basis for Rejection of claim 20 Based on Hu et al. Under § 102(b)

In the rejection of claim 20, the Examiner only states:

“the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1”.

Method claim 20, similarly to apparatus claim 1, has been amended to include, in the step of “generating decision data”, “selecting an estimated value for a second information bit from a pair of first and second data bit outputs”.

As noted above in distinguishing claim 1 over Hu et al., the Examiner’s reliance on functions performed by Hu et al. in the re-encoder and demapper do not fit with “selecting an estimated value for a second information bit, etc.”, particularly since Hu’s references to Z0, Z1 and Z2 cited by the Examiner apply to encoding, not decoding and do not relate to selecting an estimated value for a second information bit (X2) as claimed. As discussed above in connection with claim 1, Hu et al. does not disclose selecting an estimated value for a second information bit in connection the step of generating decision data since Hu et al. requires additional steps (apparatus) for re-encoding and demapping before being able to perform such functions. Applicant’s claimed arrangements are therefore simpler and more straightforward than those disclosed by Hu et al.

It is respectfully submitted that no showing has been made that the several unrelated parts of Hu et al. relied upon in the rejection are applicable to claim 20. Furthermore, Hu et al. does not disclose the claimed steps in the same relations as claimed. Reconsideration and allowance of claim 20 are therefore respectfully requested.

(c) The Rejection of claims 3,4, 10 and 11 Based on Hu et al. in View of Albery (US 6304616) Under § 103(a)

(c)(i) The Basis for Rejection of Claims Under 35 U.S.C. § 103(a)

To establish a *prima facie* case of obviousness, three basic criteria must

be met. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings of a plurality of references. Finally, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's own disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

The Federal Circuit Court of Appeals has made it clear that patent examiners cannot rely on their own knowledge as a basis for rejecting patent applications without the citation of specific evidence (references) having a teaching, suggestion or motivation to modify a reference or to combine two or more references . See *In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002).

In a long line of cases, the Federal Circuit has specified that obviousness can be shown only when prior art of record provides a "suggestion or incentive", *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577 (Fed. Cir. 1984), "teaching, suggestion or incentive", *In re Geiger*, 815 F.2d 686, 688 Fed. Cir. 1987), "reason suggestion or motivation", *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992), or "teaching, suggestion or motivation", *In re Raynes*, 7 F.3d 1037, 1039 (Fed. Cir. 1993) to combine existing elements from different sources.

This firm rule, that an Examiner cannot reject claims as obvious unless he can point to specific references suggesting that elements could be combined or modified, has been repeated many times by the Federal Circuit. See *In re Dembiczak*, 175 F.3d 994, 999; *Ruiz v. A. B. Chance Co.*, 234 F. 3d 654,665 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

It is respectfully submitted that the Examiner is required to find each and every element of the claims in citable references and, most importantly, to find such references which teach, suggest and/or motivate the person of ordinary skill

to combine such elements in the manner set forth in the rejected claims. Absent the elements or the showing of a teaching, suggestion or motivation to combine such elements, an obviousness rejection cannot stand.

The examiner bears the burden of establishing a *prima facie* case of obviousness and “can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988, emphasis added). To support a conclusion that a claimed combination is obvious, either: (a) the references must expressly or impliedly suggest the claimed combination to one of ordinary skill in the art, or (b) the examiner must present a convincing line of reasoning as to why a person of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

(c)(ii) The Stated Basis for Rejection of claims 3, 4,10 and 11

Based on Hu et al. in View of Albery (US 6304616) Under § 103(a)

In the rejection of each of claims 3, 4, 10 and 11, the Examiner acknowledges that Hu et al. does not disclose all elements of those claims and states:

“Hu fails to teach a system further including means for concurrently selecting the appropriate first data bit and second data bit into a trellis state in response to the selection of the minimum path metric into the trellis state.”

The Examiner attempts to overcome this gap by referring to Albery as follows:

“Albery teaches determining the minimal path metric (col. 4, lines 23 – 25) and determine the most probable state group (col. 4, lines 26 – 29) within four states (col. 4, lines 18 – 20), each group contains two symbols (col. 3, lines 46 – 50)”.

Claims 3 and 4 include all of the limitations of claim 1 since they each are

dependent upon claim 2, which is dependent in turn on claim 1. As was pointed out above in the remarks distinguishing claim 1 over Hu et al., that reference does not disclose all of the elements of claim 1. Furthermore, the Examiner notes the additional absence of "means for concurrently selecting the appropriate first data bit and second data bit into a trellis state, etc.".

Alberty relates to a different arrangement than either Hu et al. or the present invention. The Examiner has failed to show why or how one might combine Hu et al. with Alberty to arrive at the presently claimed invention of claims 3, 4, 10 or 11.

It is respectfully submitted that the Examiner is required to find each and every element of the claims in citable references and, most importantly, to find such references which teach, suggest and/or motivate the person of ordinary skill to combine such elements in the manner set forth in the rejected claims. Absent elements of the claims and any showing of a teaching, suggestion or motivation to combine the references, an obviousness rejection cannot stand.

The action does not make out a *prima facie* case of obviousness with respect to any of the rejected claims 3, 4, 10 or 11.

There is clearly no objective teaching in the cited references that would lead an individual of ordinary skill to somehow combine Hu et al. and Alberty to arrive at Applicant's claimed combinations. Under the law applied in obviousness rejections, the Examiner's rejection should be withdrawn (*In re Fine*, *supra*).

It is respectfully requested that the rejection of claims based on the combination of Hu et al. in view of Alberty be reconsidered and withdrawn.

3. Conclusion

Independent claims 1, 8 and 20 each include distinguishing features as pointed out above which are not found in the cited references or any combination of those references. Claims 2 and 14 further clarify distinguishing features of the invention relating to particular characteristics which are not found in either of the cited references.

In view of the foregoing amendments and Remarks,
reconsideration and withdrawal of all of the rejections and allowance of all
pending claims 1 – 20 are respectfully requested.

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February 16, 2007

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